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Ag 84M

VENTILATION SYSTEM

for cold, free-stall barns //

COOPERATIVE
FARM BUILDING

Plan No. 6126

(2 SHEETS)

PLAN EXCHANGE



The cold, free-stall system of housing dairy cattle has created some serious ventilation problems. The cows have complete internal freedom of movement, and they are able to spread manure and urine over the entire alley area. This produces excessive moisture.

To remove this moisture, the dairyman can insulate the barn and use expensive mechanical ventilation, or he can build an uninsulated barn and depend on the difference between the inside and outside temperatures to produce an adequate air movement by using the chimney effect of the building itself.

The chimney effect has been widely used with excellent results, but experience has shown that the air inlets and outlets must be well designed for the gravity air movement system to be successful.

Many plans show the openings necessary for ventilating cold, free-stall barns, but they are ignored in construction. As an emphatic reminder to builders and farmers, this plan was developed to show the openings required to achieve adequate ventilation.

The illustration depicts air movement through continuous openings, bathing the interior roof surface

with dry air to provide an insulating effect. If moisture and condensation are to be controlled, the inside temperature must be held within 10° to 15° F. of the outside temperature.

The illustrations on the back depict air movement patterns under varying weather conditions. Figure 1 shows the openings required to create natural ventilation. Figures 2 and 4 illustrate the winter air currents created in still air and windy weather. Figure 3 depicts summer air movement produced by wind and sun. The sidewall ventilators are in the open position.

This system adds little or no cost when built during initial construction, and there are only minor operating costs.

Working drawings may be obtained from the extension agricultural engineer at your State university. There may be a small charge to cover cost of printing.

If you do not know the location of your State university, send your request to Agricultural Engineer, Extension Service, U.S. Department of Agriculture, Washington, D.C. 20250. He will forward your request to the correct university.

ORDER PLAN NO. 6126, VENTILATION SYSTEM FOR COLD, FREE-STALL BARN.

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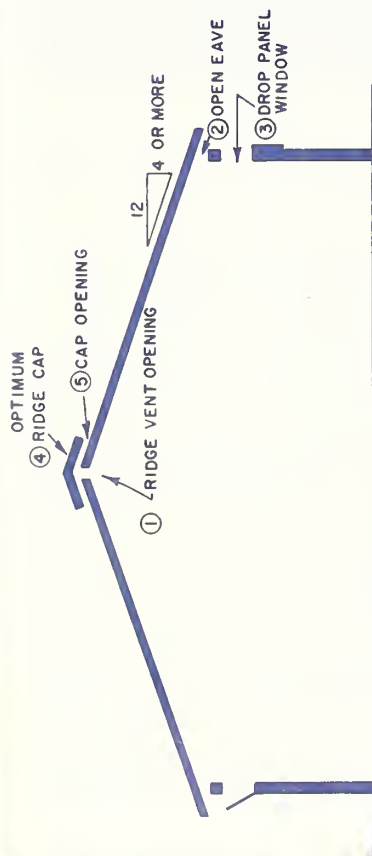


FIG. 1 OPENINGS REQUIRED

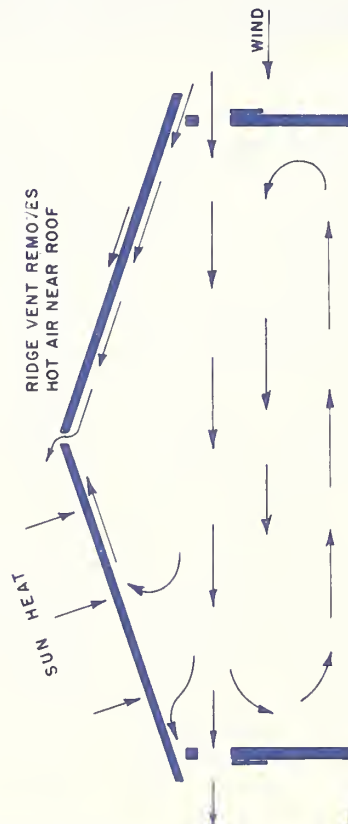
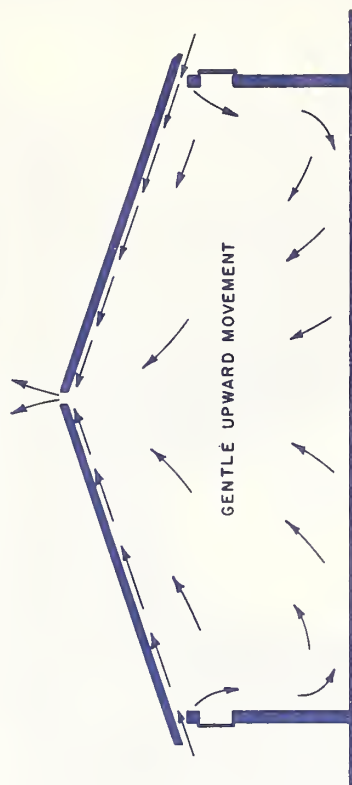


FIG. 3 SUMMER AIR MOVEMENT
DROP PANELS OPEN



WINTER AIR MOVEMENT IN BARN
FIG. 2 NO WIND OUTSIDE

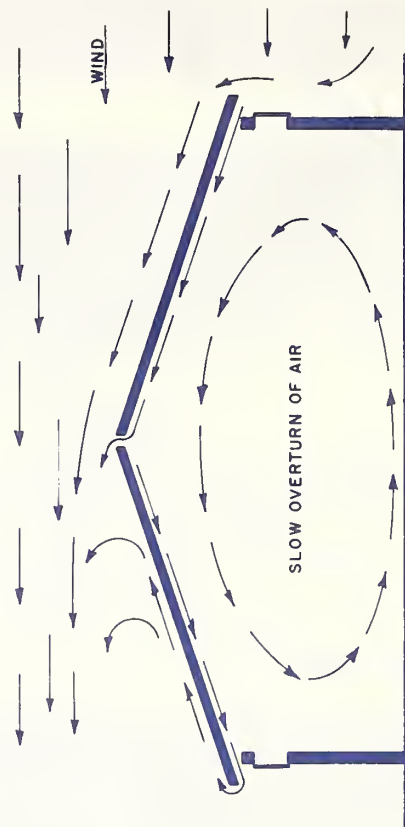


FIG. 4 WINTER AIR MOVEMENT IN BARN
WIND BLOWING

VENTILATION REQUIREMENTS FOR COLD, CLOSED FREE-STALL BARN

1. RIDGE OPENING - 6" OPENING FOR BUILDINGS UP TO 40' WIDE (MINIMUM OPENING) (CONTINUOUS) OVER 40' WIDE - 1 1/4" PER 10' OF WIDTH
2. EAVE OPENING - 6" MINIMUM HEIGHT, BETWEEN RAFTERS BOTH SIDES OF BARN
3. DROP PANEL OR WINDOW - CONTINUOUS BOTH SIDES OF BARN 18" TO 24" HIGH
4. RIDGE CAP OPTIONAL - USUALLY 3' TO 4' WIDE
5. RIDGE CAP OPENING - 4" UNDER CAP
6. ROOF SLOPE MINIMUM 4" IN 12"
7. WHITE OR ALUMINUM ROOFING FOR REFLECTIVE COOLING IN SUMMER

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